

SEQUENCE LISTING

<110> Japan Science and Technology Corporation

<120> Hollow nano-particles composed of cysteine-modified proteins, and their use as a therapeutic drug

<130> P023P05

<150> JP2002-191386

<151> 2002-6-28

<150> JP2003-183863

<151> 2003-6-27

<160> 36

<170> PatentIn Ver. 2.1

<210> 1

<211> 1218

<212> DNA

<213> Hepatitis B virus

<220>

<221> CDS

<222> (1)..(1218)

<400> 1

atg	aga	tct	ttg	ttg	atc	ttg	gtt	ttg	tgt	ttc	ttg	cca	ttg	gct	gct	48
Met	Arg	Ser	Leu	Leu	Ile	Leu	Val	Leu	Cys	Phe	Leu	Pro	Leu	Ala	Ala	
1				5						10					15	

ttg	ggt	aag	gtt	cga	caa	ggc	atg	ggg	acg	aat	ctt	tct	gtt	ccc	aat	96
Leu	Gly	Lys	Val	Arg	Gln	Gly	Met	Gly	Thr	Asn	Leu	Ser	Val	Pro	Asn	

20	25	30	
cct ctg gga ttc ttt ccc gat cac cag ttg gac cct gcg ttc gga gcc 144			
Pro Leu Gly Phe Phe Pro Asp His Gln Leu Asp Pro Ala Phe Gly Ala			
35	40	45	
aac tca aac aat cca gat tgg gac ttc aac ccc aac aag gat caa tgg 192			
Asn Ser Asn Asn Pro Asp Trp Asp Phe Asn Pro Asn Lys Asp Gln Trp			
50	55	60	
cca gag gca aat cag gta gga gcg gga gca ttc ggg cca ggg ttc acc 240			
Pro Glu Ala Asn Gln Val Gly Ala Gly Ala Phe Gly Pro Gly Phe Thr			
65	70	75	80
cca cca cac ggc ggt ctt ttg ggg tgg agc cct cag gct cag ggc ata 288			
Pro Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln Ala Gln Gly Ile			
85	90	95	
ttg aca aca gtg cca gca gca cct cct cct gcc tcc acc aat cgg cag 336			
Leu Thr Thr Val Pro Ala Ala Pro Pro Pro Ala Ser Thr Asn Arg Gln			
100	105	110	
tca gga aga cag cct act ccc atc tct cca cct cta aga gac agt cat 384			
Ser Gly Arg Gln Pro Thr Pro Ile Ser Pro Pro Leu Arg Asp Ser His			
115	120	125	
cct cag gcc atg cag tgg aat tcc aca aca ttc cac caa gct ctg cta 432			
Pro Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His Gln Ala Leu Leu			
130	135	140	
gat ccc aga gtg agg ggc cta tat ttt cct gct ggt ggc tcc agt tcc 480			
Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser			
145	150	155	160
gga aca gta aac cct gtt ccg act act gcc tca ccc ata tct ggg gac 528			
Gly Thr Val Asn Pro Val Pro Thr Thr Ala Ser Pro Ile Ser Gly Asp			

165	170	175	
cct gca ccg aac atg gag aac aca aca tca gga ttc cta gga ccc ctg 576			
Pro Ala Pro Asn Met Glu Asn Thr Thr Ser Gly Phe Leu Gly Pro Leu			
180	185	190	
ctc gtg tta cag gcg ggg ttt ttc ttg ttg aca aga atc ctc aca ata 624			
Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile			
195	200	205	
cca cag agt cta gac tcg tgg tgg act tct ctc aat ttt cta ggg gga 672			
Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe Leu Gly Gly			
210	215	220	
gca ccc acg tgt cct ggc caa aat tcg cag tcc cca acc tcc aat cac 720			
Ala Pro Thr Cys Pro Gly Gln Asn Ser Gln Ser Pro Thr Ser Asn His			
225	230	235	240
tca cca acc tct tgt cct cca att tgt cct ggc tat cgc tgg atg tgt 768			
Ser Pro Thr Ser Cys Pro Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys			
245	250	255	
ctg cgg cgt ttt atc ata ttc ctc ttc atc ctg ctg cta tgc ctc atc 816			
Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile			
260	265	270	
ttc ttg ttg gtt ctt ctg gac tac caa ggt atg ttg ccc gtt tgt cct 864			
Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro Val Cys Pro			
275	280	285	
cta ctt cca gga aca tca acc acc agc acg ggg cca tgc aag acc tgc 912			
Leu Leu Pro Gly Thr Ser Thr Thr Ser Thr Gly Pro Cys Lys Thr Cys			
290	295	300	
acg att cct gct caa gga acc tct atg ttt ccc tct tgt tgc tgt aca 960			
Thr Ile Pro Ala Gln Gly Thr Ser Met Phe Pro Ser Cys Cys Cys Thr			

305	310	315	320
aaa cct tgc gac gga aac tgc act tgt att ccc atc cca tca tcc tgg 1008			
Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp			
325		330	335
gct ttc gca aga ttc cta tgg gag tgg gcc tca gtc cgt ttc tcc tgg 1056			
Ala Phe Ala Arg Phe Leu Trp Glu Trp Ala Ser Val Arg Phe Ser Trp			
340		345	350
ctc agt tta cta gtg cca ttt gtt cag tgg ttc gta ggg ctt tcc ccc 1104			
Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly Leu Ser Pro			
355		360	365
act gtt tgg ctt tca gtt ata tgg atg atg tgg tat tgg ggg cca agt 1152			
Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Tyr Trp Gly Pro Ser			
370		375	380
ctg tac aac atc ttg agt ccc ttt tta cct cta tta cca att ttc ttt 1200			
Leu Tyr Asn Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro Ile Phe Phe			
385		390	395
400			
tgt ctt tgg gta tat att 1218			
Cys Leu Trp Val Tyr Ile			
405			

<210> 2

<211> 406

<212> PRT

<213> Hepatitis B virus

<400> 2

Met Arg Ser Leu Leu Ile Leu Val Leu Cys Phe Leu Pro Leu Ala Ala

1 5 10 15

Leu Gly Lys Val Arg Gln Gly Met Gly Thr Asn Leu Ser Val Pro Asn
 20 25 30

Pro Leu Gly Phe Phe Pro Asp His Gln Leu Asp Pro Ala Phe Gly Ala
 35 40 45

Asn Ser Asn Asn Pro Asp Trp Asp Phe Asn Pro Asn Lys Asp Gln Trp
 50 55 60

Pro Glu Ala Asn Gln Val Gly Ala Gly Ala Phe Gly Pro Gly Phe Thr
 65 70 75 80

Pro Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln Ala Gln Gly Ile
 85 90 95

Leu Thr Thr Val Pro Ala Ala Pro Pro Pro Ala Ser Thr Asn Arg Gln
 100 105 110

Ser Gly Arg Gln Pro Thr Pro Ile Ser Pro Pro Leu Arg Asp Ser His
 115 120 125

Pro Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His Gln Ala Leu Leu
 130 135 140

Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser
 145 150 155 160

Gly Thr Val Asn Pro Val Pro Thr Thr Ala Ser Pro Ile Ser Gly Asp
 165 170 175

Pro Ala Pro Asn Met Glu Asn Thr Thr Ser Gly Phe Leu Gly Pro Leu
 180 185 190

Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile
 195 200 205

Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe Leu Gly Gly
 210 215 220

Ala Pro Thr Cys Pro Gly Gln Asn Ser Gln Ser Pro Thr Ser Asn His
 225 230 235 240

Ser Pro Thr Ser Cys Pro Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys
 245 250 255

Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile
 260 265 270

Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro Val Cys Pro
 275 280 285

Leu Leu Pro Gly Thr Ser Thr Thr Ser Thr Gly Pro Cys Lys Thr Cys
 290 295 300

Thr Ile Pro Ala Gln Gly Thr Ser Met Phe Pro Ser Cys Cys Cys Thr
 305 310 315 320

Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp
 325 330 335

Ala Phe Ala Arg Phe Leu Trp Glu Trp Ala Ser Val Arg Phe Ser Trp
 340 345 350

Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly Leu Ser Pro
 355 360 365

Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Tyr Trp Gly Pro Ser
 370 375 380

Leu Tyr Asn Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro Ile Phe Phe
 385 390 395 400

Cys Leu Trp Val Tyr Ile
405

<210> 3

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 3

gcaccacagt ctcctggcca aaattc

26

<210> 4

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 4

gaattttggc caggagacgt ggggtgc

26

<210> 5

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 5

tcaccaacct ctagtcctcc aatttg

26

<210> 6

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 6

caaattggag gactagaggt tggatga

26

<210> 7

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 7

ctgtcctcc aataagtcct ggctatcg

28

<210> 8

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 8

cgatagccag gacttattgg aggacaag

28

<210> 9

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 9

tatcgctgga tggcgctgcg gcgttttatac

30

<210> 10

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 10

aaaacgccgc agcgccatcc agcgatagcc

30

<210> 11

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 11

catcctgctg ctaccctca tcttcttg

28

<210> 12

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 12

caagaagatg agggctagca gcaggatg

28

<210> 13

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 13

atgttgcccg ttgcgcctct acttcca

27

<210> 14

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 14

tggaagtaga ggcgcaacgg gcaacat

27

<210> 15

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 15

agcacggggc cttcgaagac ctgcacgatt

30

<210> 16

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 16

gtgcaggtct tcgaaggccc cgtgctggtg

30

<210> 17

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 17

ccatgcaaga cctcgacgat tctgct

27

<210> 18

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 18

agcaggaatc gtcgaggtct tgcattgg

27

<210> 19

<211> 25

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 19

atgtttccct ctggttgctg tacaa

25

<210> 20

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 20

ttgtacagca actagaggga aacat

25

<210> 21

<211> 25

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 21

tttcctctt gcagctgtac aaaac

25

<210> 22

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 22

ttttgtacag ctgcaagagg gaaac

25

<210> 23

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 23

cctcttgttg ctcgacaaaa ccttcg

26

<210> 24

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 24

cgaaggtttt gtcgagcaac aagagg

26

<210> 25

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 25

tcggacggaa acagcacttg tattcc

26

<210> 26

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 26

ggaatacaag tgctgtttcc gtccga

26

<210> 27

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially

Synthesized Primer Sequence

<400> 27

cggaaactgc acggccattc ccatccca

28

<210> 28

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 28

tgggatggga atggccgtgc agtttccg

28

<210> 29

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 29

accaattttc ttgcgcttt gggatac

28

<210> 30

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 30

gtatacccaa agcgcaaaga aaattggt

28

<210> 31

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 31

ccttcggacg gaaacagcac ggccattccc

30

<210> 32

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 32

gggaatggcc gtgctgttgc cgtccgaagg

30

<210> 33

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 33

tttcctctt gtgctcgac aaaac

25

<210> 34

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 34

gtttgtcga gctacaagag ggaaa

25

<210> 35

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 35

atgtttccct cttctagctc gacaa

25



<210> 36

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 36

ttgtcgagct agaagaggga aacat